ORIGINAL

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of the Commission's Rules	)	**WT Docket No. 95-56**
Concerning Low Power Radio and	)	RM-7784
Automated Maritime Telecommunications	)	
System Operations in the 216-217 MHz	)	
Band	)	

To: The Commission - **Mail Stop 1170**

COMMENTS OF PHONIC EAR, INC.

Table of Comments

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SUMMARY

(i) Phonic Ear applauds the Commission's proposal to create a new Low Power Radio Service ("LPRS") and to open up the 216-217 MHz band to educational and health care uses. Adoption of the rules proposed in this proceeding will go a long way toward fulfilling Chairman Hundt's recent commitment to carry out the Commission's "duty to make sure that people with disabilities are able to share in the communications revolution." It is an important vehicle for fulfilling the Chairman's commitment to consider assigning permanent, exclusive channels for assistive listening devices.

(ii) Auditory assistance devices in the LPRS should not be secondary to any service except television broadcasting, and a reasonable number of channels should be reserved for their use. LPRS systems should be licensed, but only those transmitters above 10 mW TPO. Licenses should be for specific locations, to establish a database that will allow system designers to know the environment in which they are working. Transmitters of 10 mW power or less, which have little if any interference potential, should be permitted to operate unlicensed, without geographical restriction, to allow users to travel freely with their equipment. Further, transmitters of 10 mW or less should be subject to the less burdensome certification process rather than type acceptance.

(iii) There should be no restriction on the use of auditory assistance systems in legitimate educational institutional settings, including for "soundfield" systems described in these Comments, and in simultaneous language translation settings, where the inability

to "hear" arises from lack of understanding rather than physical hearing problems. However, it is critical that steps be taken to avoid the proliferation of consumer devices sold at general retail outlets; retailers should be required to advise purchasers of licensing requirements and to refund the price of equipment sold improperly.

(iv) The band should be channelized, with combining channels permitted; and low power channels should be restricted to 10 mW rather than 100 mW TPO. LETS systems should be restricted to two channels whenever possible, and AMTS links should be limited in power and required to use directional antennas.

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Amendment of the Commission's Rules Concerning Low Power Radio and Automated Maritime Telecommunications System Operations in the 216-217 MHz Band	)	**WT Docket No. 95-56** RM-7784

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COMMENTS OF PHONIC EAR, INC.

Introduction

1. Phonic Ear, Inc. hereby submits its comments in response to the Commission's *Notice of Proposed Rule Making* ("Notice") in the above-captioned proceeding, FCC 95-174, released May 16, 1995. Phonic Ear is a leading manufacturer of auditory assistance systems and has been engaged in that business for 32 years. It was the petitioner that initiated the rule making leading to opening up the 72-76 MHz band to auditory assistance devices under what is now Section 15.237 of the Commission's Rules[1/] and filed the petition that led to the inclusion of auditory assistance devices in this proceeding.[2/]

1/ *Auditory Training Devices*, 35 FCC 2d 677 (1972).

2/ Phonic Ear was also the petitioner in RM-3832, which led to the adoption of rules in GEN Docket No. 81-786, *Auditory Assistance Devices*, 90 FCC 2d 1015 (1982), and the petitioner in RM-7251, which led to the adoption of rules in ET Docket No. 91-150, *Auditory Assistance Devices for the Hearing Impaired*, 7 FCC Rcd. 2256 (1992).

2. Phonic Ear applauds the Commission's proposal to create a new Low Power Radio Service ("LPRS") and to open up the 216-217 MHz band to educational and health care uses. It urges the Commission to adopt rules promptly, so that the benefits of new low power RF technology may be brought as soon as possible to persons whose daily lives will be enriched by it. As FCC Chairman Reed E. Hundt said just three weeks ago:

> We have no higher responsibility and no greater opportunity than our duty to make sure that people with disabilities are able to share in the communications revolution.[3/]

The Chairman expressed a commitment to many steps, including considering assigning permanent, exclusive frequencies for assistive listening devices. This proceeding is a prime opportunity to keep those commitments. It addresses currently unoccupied frequencies, which are well-suited for auditory assistance devices; and auditory assistance devices are able to use the band without any threat of interference to television broadcast reception on adjacent TV Channel 13.

3. There are three important needs relating to auditory assistance devices which will be fulfilled by the new band: (a) opening more channels, to accommodate large educational institutions with many classrooms; (b) creating interference-free channels, to deal with the serious, increasing interference being received by 72-76 MHz systems from

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3/ Address before the Eleventh International Telecommunications for the Deaf Incorporated Convention at Cambridge, Massachusetts, as quoted in FCC News Release dated June 28, 1995.

high-powered operations in that band;[4/] and (c) making available a shorter wavelength, which will make possible miniaturized devices with short antennas that are cosmetically more acceptable[5/] than devices operating in the 72-76 MHz band.[6/] These needs should serve as guideposts in structuring the new rules. In addition, new rules should minimize the administrative burden on users, facilitate the production of the most effective equipment, and -- very importantly -- not allow the band to degenerate into a "junk band" populated with general consumer devices.

4. The remainder of these comments will focus on specific aspects of the proposed rules.

4/ Phonic Ear does not mean to imply that it has any intention of abandoning the 72-76 MHz band or that the Commission need no longer pay attention to the needs of users in that band. There is a large installed base of equipment at 72-76 MHz, the users of which have expansion needs that must be satisfied with compatible equipment. There are also many successfully operating installations in the 72-76 MHz band which have no need to change. Phonic Ear intends to remain active in manufacturing and servicing 72-76 MHz equipment.

5/ Cosmetic acceptance is particularly critical to teenagers, some of whom forego the use of important tools that can help them to learn because of embarrassment at wearing large auditory assistance devices.

6/ These needs were discussed at length in Phonic Ear's petition for rule making in this proceeding. Rather than repeating all of the same material here, Phonic Ear urges that the Commission's Staff working on this proceeding review the petition filed by Phonic Ear on June 2, 1993.

Secondary Status

5. As noted above, it is critical that interference-free channels be available for auditory assistance systems. The purely secondary status of these devices in the 72-76 MHz band has resulted in a degradation of service in many locations, with exceptional efforts required to find ways to provide relief to those whose hearing is rudely interrupted by high-powered paging and other messages. It is particularly difficult to instruct children in an educational environment when the teacher does not know whether the child is listening to him or her or to something entirely unrelated that has blanked out the teacher's signal. Accordingly, while Phonic Ear has no objection to the LPRS being secondary to television broadcasting on Channel 13, it urges that no service have primary status over LPRS other than television broadcasting and that a reasonable number of channels be set aside exclusively for auditory assistance devices.7/

Licensing

6. Phonic Ear has urged in the past, and continues to urge here, that at least some LPRS systems should be licensed. Good reasons for licensing are that it calls to the attention of the user the fact that radio transmissions are federally regulated and that the equipment must be used in a lawful manner, and it results in the establishment of a

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7/ Phonic Ear is particularly concerned about a lst-minute proposal the Commission is taking to the World Radio Conference, as a result of IC Docket No. 94-31, to use the 216-216.5 MHz band for satellite feeder links. Phonic Ear recently filed an *ex parte* comment in opposition to that proposal and urges that the Staff of the Wireless Telecommunications Bureau communicate with the Staff of the International Bureau with regard to this matter.

database that enables prospective new users and the designers of their systems to determine who else is in their area whose operations must be taken into account. In order for licensing to serve the latter function, LPRS licenses should indicate exactly where their equipment is being used. Therefore, Phonic Ear urges that LPRS licenses be issued for specific locations rather than on a general basis throughout a cellular telephone system service area.[8/] Any additional burden in applicants in determining the latitude and longitude of their location will be outweighed by the benefit of the resulting database.[9/]

7. Licensing does create an administrative burden, however; and it also presents obstacles to some useful and important applications of auditory assistance devices. Hard-of-hearing individuals who use auditory assistance devices at home or who buy their own system to use in mainstream schools that have no systems of their own may be discouraged by a federal licensing requirement. Moreover, individuals should be able to

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8/ Area-wide licensing may be more appropriate for LETS licenses. Phonic Ear takes no position on that issue with respect to the two LETS channels proposed for the Police Radio Service under Part 90 of the Rules. However, if LETS licenses are issued on an area-wide basis, such licensing should be limited to the two channels reserved for LETS and should be covered by Part 90 rather than Part 95. Thus Section 95.1003 should read: "Each LPRS system that requires licensing under this subpart shall be licensed to a particular fixed location or a defined operating radius of not more than one kilometer around a fixed location." See par. 13, *infra*, for a further discussion of channels to be used for LETS.

9/ As a less desirable, but administratively less burdensome, alternative, licenses could be issued based on the coordinates of the community, rather than the exact location, where the system is located. Community coordinates are readily available from commercial databases.

travel freely with their systems, and there should be no obstacle to school class and other group trips.[10/] Since the interference potential of very low power equipment is minimal, Phonic Ear suggests that licensing be required for systems with more than a certain power level but not for equipment operating at that level or less. Phonic Ear suggests that the cut-off be 10 mW TPO, as that is the level above which battery drain becomes a design problem and the use of AC power becomes more likely.[11/] A dual licensed/unlicensed scheme will best fulfill the dual needs for control over interference in the band while still allowing complete freedom of use when interference potential is minimal.[12/]

Eligibility

8. It is important that all those who have a legitimate need for LPRS systems be permitted to use them; but it is equally important that LPRS systems not be mass-marketed in a manner that results in widespread use outside the scope of the Commission's Rules, because the result will be to make the 216-217 MHz a "junk band,"

10/ Class trips to places of interest such as Washington, D.C., are a commonplace activity.

11/ Unlicensed equipment should be prohibited from using high-gain antennas. Thus Section 95.1005(a) should read: "Each LPRS system with more than 10 mW output power, or using an antenna with more than 3 dB gain, must be licensed at each location or in each area in which it operates."

12/ There is precedent for unlicensed operation under Part 95, as CB transmitters may be operated without applying for a license from the Commission.

with destructive interference to legitimate users as well as to television reception.[13/] While drawing a line between proper and improper uses may be difficult, the Commission must do its best, in order to provide meaningful relief to those who really need the help the new band will offer. Phonic Ear will offer several suggestions in these comments.

9. Legitimate needs for LPRS go beyond persons with disabilities, hard-of-hearing persons, and ill persons receiving health care. They include classrooms where children have attention problems.[14/] There is also a demand for auditory assistance devices in simultaneous language translation situations, where many people cannot "hear" not because their natural ear functions are impaired but because they do not understand the language. There is no need to preclude these useful and valuable applications of LPRS,

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13/ The Commission must avoid LPRS systems being used as wireless data links for general purposes within the home, such as remote control, paging children at play who have no hearing impairment or disability, etc. See, for example, *Stuart David Saunders*, Order responding to RM-5194, released June 30, 1986.

14/ The problem becomes more severe the larger the classroom and the further away from the teacher children sit. Further, there are estimates that 25% of elementary school children in grades K through 3 suffer from otitis media (ear infections) one or more times during the school year; while these infections do not require the child to stay out of school, they result in fluctuating temporary hearing loss that can interfere with a child's paying attention in class. Phonic Ear manufactures "soundfield" systems that even out the sound level throughout a classroom through the strategic placement of speakers in the room. The teacher uses a body-worn wireless microphone, affording freedom of movement and eliminating the need to shout to be heard at the far corners of the room. These systems have generated significant interest among professional educators. Arguably, they are being used to address disabilities of a mild sort. Whatever conclusion is drawn in that regard, the use of auditory assistance devices should never be barred in legitimate educational institutional settings.

or any auditory assistance device for that matter. Finally, hard-of-hearing individuals should not be precluded from using auditory assistance devices to meet their own personal needs, although such use perhaps should be limited to 10 mW systems, where licensing is not required and the geographic area of operation need not be restricted.

10. Retailers are a critical point of contact for the public in dealing with RF devices and should be held responsible if they sell products in a manner that encourages uses of LPRS systems outside scope of the Rules. Thus Phonic Ear proposes the following rules:

a. Section 95.1007(a) should read: "Engaged in the operation of auditory assistance devices for persons with special hearing needs, including amplification and simultaneous language translation."[15/]

b. A new Section 95.1013 should be added to read:

"§ 95.1013: Marketing Requirements.

(a) No LPRS transmitter which requires a license may be marketed without an FCC license application included in the package with the transmitter.

(b) The user manual for LPRS transmitters shall include a clear statement at the beginning setting forth Sections 95.1007 and 95.1035 of the Commission's Rules and explaining that use of the equipment in violation of those sections is contrary to federal law and may expose the user to prosecution and punishment.

15/ It appears that Section 95.1007(c), as proposed by the Commission in the NPRM, is broad enough to allow the operation of soundfield systems in school classrooms. However, Phonic Ear does not know why there is a need for "philanthropic" institutions to be eligible or why ecclesiastical institutions should be eligible apart from eligibility they may have under subsection (a). Thus it would be better for subsection (c) to read: "Engaged in the operation of an educational institution." "Institution" is a better word than activity in this case.

> (c) Any vendor of LPRS equipment who does not comply with subsection (a) and (b) of this section shall be required to take back the equipment and make a full refund of the purchase price at the request of any customer.

11. The above suggestions should allow the use of auditory assistance devices in applications where they are most needed, while preserving order in the 216-217 MHz band and putting retailers on notice that they may not encourage and profit from unlawful use with impunity.

Technical Standards

12. Channelization. Phonic Ear believes that the orderly development of the band requires that specific center-channel frequencies be established by rule. An environment with a fixed structure is necessary for the effective design of auditory assistance equipment and systems, because it establishes known parameters for sources of interference. Designers will know that they must deal with co-channel interference, and they will know how far off center channel the next source of potential interference may be found.[16/]

13. Assignment of channels. The Commission's proposal for 18 channels at 100 mW and 10 channels at one watt is an appropriate division, as are the two channels proposed for LETS in proposed Section 90.19(d) of the Rules. However, Phonic Ear recommends that the low-power channels be restricted to 10 mW TPO and antenna gain

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16/ Uniform channelization has been found desirable in other contexts. See *Cordless Telephones*, 77 RR 2d 706 (1995), where the use of offset channels for cordless telephones was deleted from the Rules to improve performance in the 49 MHz band.

of no more than 3 dB. Phonic Ear also does not understand why LETS systems require more than two channels, since use will be only occasional, when a burglary occurs, and licensing will be limited to entities that have an agreement with local law enforcement authorities. The fact that LETS signals will be emitted from unpredictable and varying locations is of concern to Phonic Ear, as it will be impossible to design auditory assistance systems to avoid receiving interference from a burglar whose route of flight is unknown. Therefore, Phonic Ear urges that LETS systems be restricted to the two channels specified in proposed Section 90.19(d). If any additional channels are necessary in a particular service area, a special showing in the license application should be required, and licensing should be limited to the Group 2 one-watt LPRS channels, assigned in ascending order from Channel 21. That way, auditory assistance designers will know that the probability of interference from LETS systems is small and in any event is greatest on lower channel numbers.

14. AMTS point-to-point links. The proposed rules are silent as to technical standards for AMTS point-to-point links, so it is difficult to anticipate the interference potential of such links. Phonic Ear urges that AMTS links be limited to the lowest power necessary to reach the destination, with a low absolute power limit that will restrict use of the band to short-haul links, and that AMTS links be limited, as proposed in the Notice, to the 216.7625-216.9875 MHz band. Directional antenna standards should also be promulgated.

15. Bandwidth. It is unlikely that all auditory assistance devices can be accommodated in a 25 kHz bandwidth, so Phonic Ear urges the Commission to adopt its proposal to allow channels to be combined. Auditory assistance devices serve two purposes: they allow persons to hear, but they are also critical in training young hard-of-hearing children to speak. Speech is learned by imitating sound, so learning to speak is an extremely difficult task for a person who cannot hear -- so difficult that many deaf persons never master it. In order for a child to learn to speak intelligibly, the child must hear the full range of speech frequencies, and the transmission of that range will normally require a bandwidth of 50 kHz or more -- two or three of the proposed LPRS channels.17/

16. Frequency Control. The Commission has proposed to locate LPRS in Part 95 of the Rules, which requires crystal control of frequency stability under Section 95.647. While Phonic Ear has generally used crystal control in the past, it is currently designing frequency-synthesized equipment that has a crystal but is controlled by a phase lock loop. The rules should not preclude that type of frequency control.

17. Equipment Authorizations. The Commission should consider limiting the type acceptance process to LPRS transmitters with more than 10 mW TPO, utilizing the less burdensome certification procedure for equipment with 10 mW or less TPO, where interference potential is less. That change would reduce administrative burdens on both manufacturers and the Commission's Equipment Authorization Staff.

17/ The proposed Section 95.1043(c) is appropriate and necessary to accommodate 50 kHz bandwidths.

Conclusion

18. Phonic Ear again wholeheartedly endorses the opening of the 216-217 MHz band as proposed in this proceeding. This new opportunity will go beyond opening the "Information Superhighway" to the disabled. It will help open much of the world itself to hard-of-hearing persons.

19. Phonic Ear has suggested ways to open the world better by making the new band more useful. It also urges as strongly as it can that the Commission ensure that the usefulness of the band for low power devices is not eroded over time, as has happened with the 72-76 MHz band. The television broadcast industry is likely to make the point as strongly as anyone that power by all users must be restricted to very low levels, and general consumer devices must be prohibited, both to ensure the efficacy of equipment in the band and to protect television reception from interference. Only in that way will those with special needs, whom the Americans with Disabilities requires be helped, receive real and long-lived benefits.

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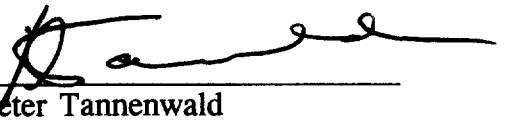
Respectfully submitted,



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